IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF TEXAS
DALLAS DIVISION

UNITED STATES OF AMERICA		§	
		§	
v.		§	No. 3:15-cr-00496-L
		§	
USPLABS, LLC	(1)	§	
JACOBO GEISSLER	(2)	§	
JONATHAN DOYLE	(3)	§	
MATTHEW HEBERT	(4)	§	
KENNETH MILES	(5)	§	
S.K. LABORATORIES	(6)	§	
SITESH PATEL	(7)	§	
CYRIL WILLSON	(8)	§	

DEFENDANTS' NOTICE OF EXPERT TESTIMONY

TO THE HONORABLE SAM A. LINDSAY:

Pursuant to the Court's order of March 27, 2017, Defendants USPlabs, LLC, Jacobo Geissler, Jonathan Doyle, Matthew Hebert, Kenneth Miles, S.K. Laboratories, Inc. ("S.K. Labs"), Sitesh Patel, and Cyril Willson (collectively, "Defendants") file the following Notice of Expert Testimony and would respectfully show the Court as follows:

INTRODUCTORY STATEMENT

Count 10 of the First Superseding Indictment ("Indictment") charges Defendants USPlabs, Geissler, Doyle, Hebert, Miles, S.K. Labs, and Patel with the introduction into interstate commerce of an adulterated dietary supplement, namely OxyElite Pro "New Formula" ("OEP NF"), on or around February 21, 2013, under 21 U.S.C. §§ 331 and 342(f)(1)(A)(i). Although the factual allegations supporting this charge are sparse, the theory on which these Defendants were charged under Count 10 is clear: OEP NF was

adulterated due to Defendants' addition to the OEP formula of an ingredient called aegeline. In particular, the Indictment offers the following narrative:

- After Defendants removed DMAA-containing products from the market, Mr. Geissler decided in 2012 to use aegeline as a replacement for DMAA in OxyElite Pro. *See* Indictment ¶¶ 26, 28. OEP NF, the first aegeline-containing version of OxyElite Pro, went on sale in or around December 2012. *See* id. ¶ 29. The composition of OEP NF remained unchanged until August 2013, after the alleged adulterated shipment in February 2013 as charged in Count 10. *See id*. ¶¶ 29, 32.

- In Fall 2013, "an outbreak of liver injuries was associated with USPlabs' products ***containing aegeline***. Numerous consumers experienced jaundice and other liver-related symptoms, and several consumers needed liver transplants in order to save their lives." *Id*. ¶ 33 (emphasis added).

- During the alleged outbreak, "Geissler instructed that … ***aegeline*** be removed from the product formula going forward." *Id*. ¶ 35 (emphasis added).

Although there are allegations in the Indictment relating alleged misrepresentations about two other ingredients, DMAA and cynanchum auriculatum ("Cynanchum"), OEP NF did not contain either of these ingredients, and the Government has not alleged that any DMAA- or Cynanchum-containing USPlabs product was adulterated.

That aegeline was the cause of the alleged "outbreak" of liver injuries among OEP NF users has also been the FDA's public position. In November 2013, Dr. Daniel Fabricant, then Director of the FDA's Division of Dietary Supplement Programs, in addressing the FDA's role in securing the removal of OEP NF from the market, stated:

> The illnesses were linked to certain OxyElite Pro dietary supplement products made by Texas-based USPLabs. Certain OxyElite Pro products and a second product, VERSA-1, contain a new dietary ingredient that has not been shown to be safe for use by consumers. **This ingedient, aegeline**, is a synthetic version of an alkaloid

> that exists, in natural form, in a tree that grows in parts of Asia.

Daniel Fabricant, Ph.D., *FDA Uses New Authorities To Get OxyElite Pro Off The Market*, FDA Voice (Nov. 18, 2013), at www.blogs.fda.gov/fdavoice/index.php/2013/11/fda-uses-new-authorities-to-get-oxyelite-pro-off-the-market/ (last visited May 5, 2017) (emphasis added). *See also* FDA Press Release, *FDA Investigation Summary: Acute Hepatitis Illnesses Linked To Certain OxyElite Pro Products* (July 30, 2014), at www.fda.gov/food/recallsoutbreaksemergencies/outbreaks/ucm370849.htm (last visited May 5, 2017).

The Government's recently-filed Notice of Testimony Under Federal Rules of Evidence 702, 703 and 705 ("Government's Notice"), however, presents an altogether different theory of Defendants' liability under Count 10. Based on the disclosures for at least two of their designated experts, Drs. Herbert Bonkovsky and Bill Gurley, it appears that the Government intends to present evidence in support of Count 10 that it was not aegeline (or any other individual ingredient for that matter) that rendered OEP NF adulterated, but an alleged "synergistic" effect created by a combination of either some or all (it is unclear which) of OEP NF's ingredients. Indeed, Dr. Bonkovsky is expected to testify that:

> ***[T]he specific individual toxic agents contained in OEP-NF and that were responsible for the acute liver injury remain uncertain based on the current published, peer-reviewed research. …*** [G]iven the fact that the product is a mixture of a number of biologically-active substances, definitively identifying the specific liver toxicant or toxicants in OEP-NF that affect humans would require research that would be largely either unethical or nearly impossible, given prevailing practices in the field of hepatology. Because chemically synthesized aegeline was the major new ingredient, it has been suggested that

> aegeline is the hepatotoxicant. However, perhaps, there were other ingredients or contaminants; perhaps the toxicity was related to aegeline in combination with other components.

Gov. Notice, at 10 (emphasis added). *See also id.* at 30 (Dr. Gurley) ("'[T]he fact that the ingredients of OEP-NF may not be specifically toxic when administered separately has little, if anything, to say about the toxicity of the multi-ingredient compound.").

In an effort to support its new "multi-ingredient" theory, the Government has also designated three individuals, Drs. Bill Gurley, Igor Katurbash, and Marjan Boerma, as experts whom it expects will testify regarding a mouse study ("Mouse Study") they initiated in July 2016 – ***over 2½ years after the alleged outbreak and over 18 months after a grand jury issued its indictment of Defendant*** – and (presumably) completed in April 2017, one month before the deadline for submitting their expert disclosures. Defendants were not informed of any such study being conducted by the Government until the submission of the Government's Notice last week. Although it appears that the Government has now provided Defendants with at least some of the documents relating to the Mouse Study, it will obviously take Defendants more than one week to develop expert testimony addressing the reliability of Drs. Gurley, Koturbash and Boerma's assumptions, methodology, results and conclusions relating to the Mouse Study.

The Government has also designated experts expected to testify as to the safety of DMAA and Cynanchum. *See, e.g.*, Gov. Notice at 27 (Drs. Gurley, Koturbash and Boerma); 69-70, 73 (Dr. Oberlies). However, the Indictment does not charge Defendants with any crime to which the safety of these ingredients are relevant. Rather, Defendants are charged with misrepresenting to customers and/or law enforcement (1) the origin of DMAA (Counts 1-4, 7), and (2) the form of Cynanchum contained in in its products

(extract vs. "pulverized root") (Counts 5, 7-9). None of these Counts requires any proof as to the safety of DMAA or Cynanchum, let alone any expert testimony on these subjects.

Moreover, the Government's disclosure of the expected testimony of Dr. Mahmoud ElSohly includes a summary of testimony regarding the "questionable" nature of three other ingredients in OEP NF: *Bauhinia purpurea*, *Hemerocallis fulva*, and Yohimbe, and his conclusion that their descriptions on OEP NF's label are not consistent with the actual form they take in the product. Gov. Notice at 18. However, there is no allegation of any misrepresentations or mislabeling as to any of these ingredients in the Indictment.

Finally, although Dr. Bonkovsky is expected to testify in reliance upon the medical records of "several" patients with acute liver injury, *see* Gov. Notice at 5, 13, the Government's Notice does not disclose the identity of those patients. Moreover, the Government has refused to identify those patients despite Defendants' request that it do so. *See* Exhibit 1. Although Defendants intend to call an expert witness that will analyze those patients' records and medical history (Dr. Robert Gish, as discussed *infra*), it cannot summarize that expected testimony with patient-specific detail without the names of those patients and time to review their relevant records.

In sum, the Government's Notice raises a host of new issues not covered in or relevant to the charges in the Indictment, which will require Defendants to further explore the need for expert testimony it did not anticipate. Defendants have done their best herein to designate experts and disclose expert testimony that addresses these newly raised issues. However, and in light of the foregoing, Defendants' Notice of Expert

Testimony ("Defendants' Notice"), reserves the right to present additional expert testimony, and to designate additional experts to address the anticipated testimony of Government's designated experts regarding (1) the "multi-ingredient" theory of adulteration, (2) the methodology, results and conclusions of the mouse study conducted by Drs. Gurley, Koturbash and Boerma; (3) the safety of DMAA and Cynanchum; (4) the accuracy of OEP NF's labeling as relates to *Bauhinia purpurea*, *Hemerocallis fulva* and Yohimbe; and (5) the profiles and diagnoses of patients purportedly harmed by OEP NF upon which Dr. Bonkovsky's expert conclusions rely.[1]

Defendants designate the following expert witnesses who may testify at the trial of this case:

1. **Christopher J. Borgert, Ph.D.**
   Gainesville, FL

Dr. Borgert is a pharmacologist and toxicologist. A copy of his *curriculum vitae* is attached as **Exhibit 2**. Dr. Borgert has a Ph.D. Medical Sciences in Pharmacology from the University of Florida, and a Bachelor's Degree in Biology from Kenyon College. Dr. Borgert is President and Principal Scientist at Applied Pharmacology and Toxicology, Inc. At the invitation of CFSAN/FDA, he presented "C*ausality Assessment of Herbal-Drug Interactions: Scientific Data vs. Diagnostic Scales,"* and at the invitation of the National Institutes of Health Office on Dietary Supplements, he presented "*Synergism, Antagonism, or Additivity of Dietary Supplements with Hemostasis and Antithrombotic Therapies."* Dr. Borgert is also Courtesy Assistant Scientist at the

[1] Defendants also reserve the right to amend or supplement its designations on other matters addressed herein. Moreover, by submitting these designations, Defendants reserve the right to contest the relevance and admissibility of any subject matter covered by these designations. Defendants also reserve the right to cross-examine and, to the extent appropriate, cross-designate those of the Government's designated experts that testify at trial.

University of Florida, College of Veterinary Medicine's Department of Physiological Sciences, Center for Environmental and Human Toxicology.

Dr. Borgert's anticipated testimony in this case will be based on his expertise, experience, and on the relevant medical scientific literature. Dr. Borgert may testify regarding the principles of scientific causation analysis in pharmacology and toxicology and review scientific methodologies to evaluate causation. Scientific determinations of causation evaluating the role of chemical substances in producing disease or injury require scientific evidence and are distinguishable from clinical judgments about causation that are made even when adequate science is unavailable. This distinction is critical in the area of drug-induced liver injury, which Dr. Borgert will testify, lacks objective methodologies for assessing causality.

Dr. Borgert will also testify that clinical diagnostic scoring methods, including those employed within the U.S. Drug-Induced Liver Injury Network (DILIN), are generally agreed to be subjective and inadequate. Because of their subjective nature, clinical diagnostic scales provide no scientific basis for assessing causation. Dr. Borgert will testify that such scales are inherently untestable by medical scientific methodology and, consequently, the error rate of conclusions based on these methodologies is unknown and unknowable.

Additionally, Dr. Borgert may testify regarding the pharmacological and toxicological properties of OEP NF and its components, including aegeline. He may testify regarding the lack of scientific literature demonstrating that aegeline causes liver injury. Rather, there is evidence to show that aegeline has beneficial effects that would tend to ameliorate liver damage that might be caused by drugs, chemicals, or other life-

style factors. Dr. Borgert's anticipated testimony may also include discussions regarding the safety of OEP NF and whether scientific data and literature show that it has any unreasonable risk of causing or contributing to liver injury. Dr. Borgert may testify as to his opinion that general causation for adverse hepatic effects of aegeline-containing products, specifically OEP NF, cannot be established--that is--the pharmacological and toxicological scientific evidence has not identified any specific doses, blood levels, or conditions under which OEP or aegeline-containing products can be demonstrated to cause adverse effects on the liver.

Dr. Borgert may also identify challenges in assessing idiosyncratic liver injury. Such injuries are neither predictable nor reproducible because they are dependent on host factors. Even de-challenge/re-challenge does not demonstrate causation definitively in the context of idiosyncratic injury because an individual's physiological and immunological status varies over time, such that it is nearly impossible to achieve controlled conditions that allow for objective testing. Thus, the cause of an idiosyncratic liver injury is extremely difficult, if not impossible, to identify. Dr. Borgert may also testify that, given that use of OEP NF was widespread in the United States and is not unique to those individuals who alleged to have suffered injury in Hawai'i, the clustering of cases in Hawai'i should have led to the conclusion that the consumption of OEP NF was an ***unlikely*** cause.

Dr. Borgert is also expected to testify regarding the requirements for valid study design, analysis, and interpretation of interaction studies involving the pharmacological and toxicological effects of mixtures of chemicals and ingredients. His testimony is expected to address the role of potency and mechanistic information in determining the

veracity of claims regarding toxicological or pharmacological interactions, including those that may arise from ingestion of the combination of ingredients in OEP NF.

It is also anticipated that Dr. Borgert will testify as to the conclusions of his review and analysis of patient claims of alleged injury due to OEP New Formula from the perspective of verifiable measurements, data, and other scientific analyses.

Additionally, Dr. Borgert may respond to testimony by any witness called by the Government in this case.

Materials on which Dr. Borgert's expected testimony will rely:

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- OxyElite Pro; Label
- Clintox Bioservices. Report on determination of maximum tolerated dose (MTD) of aegeline in Wistar rats.
- Clintox Bioservices. Report on determination of maximum tolerated dose (MTD) of aegeline in New Zealand white rabbits.
- CDC Report – Acute hepatitis & liver failure of unknown etiology in Hawaii 2013 Complaint
- Label Information for OxyElite Pro Super Thermo
- Patient Medical Records from the Queen's Medical Center
- Expert Reports from *Waikiki v. USPlabs*
- OxyElite Pro Finished Product Specification

2. **Hartmut Jaeschke, Ph.D., ATS**
Kansas City, KS

Dr. Jaeschke is a professor with extensive experience in pharmacology and toxicology. A copy of his *curriculum vitae* is attached as **Exhibit 3**. He has a Ph.D. in Toxicology and an M.S. in Biochemistry from the University of Tubingen in Germany. Dr. Jaeschke has served as a principal investigator in studies funded by the National Institutes of Health regarding drug-induced liver injury. He is Chairman and a Professor in the Department of Pharmacology, Toxicology and Therapeutics at the University of Kansas College of Medicine.

Dr. Jaeschke's anticipated testimony in this case will be based on his expertise and experience. Dr. Jaeschke may assess whether specific ingredients in OEP NF have a potential for hepatotoxic effects based on the scientifically established pharmacology and peer-reviewed scientific literature about the effects of these ingredients. Dr. Jaeschke is also expected to opine on the safety of OEP NF and potential benefits associated with components therein. Dr. Jaeschke has reviewed the scientific literature and found no evidence for any hepatotoxicity of aegeline or extracts of the Bael tree (*A. marmelos*). Instead, the literature shows these extracts to be beneficial against a variety of diseases.

Dr. Jaeschke may also testify regarding his review of pre-clinical toxicity studies performed on animals and a limited human pilot study involving aegeline, none of which showed any evidence for relevant adverse effects or liver injury in animals or humans, even at high doses and chronic treatment. In fact, the exposure in the animal studies ranged from 10-30 times higher than a human would be exposed to when using OEP NF or other dietary supplements. These data are consistent with the lack of any reports in the

literature that aegeline may cause liver injury and that there is no evidence that aegeline at the doses used in OEP NF can cause liver injury.

Finally, Dr. Jaeschke may respond to testimony by any witness called by the Government in this case, including rebutting the new hypotheses regarding the synergistic role of ingredient introduced by Drs. Bill J. Gurley, Igor Katurbash, and Marjan Boerma, (*see* Gov. Notice at 25) as well as their findings from their recent pre-clinical study employing three separate mouse strains as outlined in their disclosures.

In addition to scientific literature on aegeline and bael fruit extracts, the case-specific materials on which Dr. Jaeschke's expected testimony will rely are:

- OxyElite Pro Label
- OxyElite Pro Finished Product Specification Sheet
- Clintox Bioservices. 90-day repeated dose toxicity study of Aegeline administered by oral gavage in New Zealand White rabbits with recovery period of 14 days. Study Code: CB-ULD-SCTAEGN-01
- Clintox Bioservices. 90-day repeated dose toxicity study of Aegeline administered by oral gavage in Wistar rats with recovery period, of 14 days. Study Code: CB-ULD-SCTAEGW-Ol
- Clintox Bioservices. Report on determination of maximum tolerated dose (MTD) of aegeline in Wistar rats
- Clintox Bioservices. Report on determination of maximum tolerated dose (MTD) of aegeline in New Zealand white rabbits
- FDA Final Rule Declaring Dietary Supplements Containing Ephedrine Alkaloids Adulterated. Because They Present an Unreasonable Risk, 69 Fed. Reg. 6,788, 6,788 (Feb. 11, 2004)

3. **M. Eric Gershwin, M.D.**
   Davis, CA

Dr. Gershwin is a Distinguished Professor of Medicine and Chief of the Division of Rheumatology, Allergy and Clinical Immunology at the University of California at Davis School of Medicine. A copy of his *curriculum vitae* is attached as **Exhibit 4**. He has been a consultant and lectured to the Office of Dietary Supplements at the National Institutes of Health and the FDA. He has an M.D. from Stanford University and a B.A.

in Zoology and Mathematics from Syracuse University. Dr. Gershwin has lectured to the Office of Dietary Supplements at the National Institutes of Health, the Food and Drug Administration, and the Nehisw York Academy of Sciences, and has published three editions of a textbook on liver immunology. Dr. Gershwin is listed in the top 1% of all published authors in immunology in the world.

Dr. Gershwin's anticipated testimony in this case will be based on his expertise and experience, his publications, his review of reports alleging liver injury caused by OEP NF in 2013, and his review of available safety data on the ingredients of variants of OxyElite Pro alleged to have caused liver injury, including the individual ingredients including caffeine, aegeline, bauhinia extract, higenamine, hemerocallis fulva, yohimbe, maltodextrin, silicon dioxide, and magnesium stearate. He may also offer testimony regarding any potential interactions of these materials.

Dr. Gershwin is expected to testify that the ingredients in OEP NF do not produce acute liver failure. Rather, Dr. Gershwin may testify to chemical properties of those ingredients that suggest a different conclusion. Specifically, Dr. Gershwin may testify that the ingredients of OEP NF are water-soluble with no evidence that they accumulate in the body, and that no evidence exists that any ingredient elicits an immunological response towards the liver. One of OEP NF's ingredients, Yohimbine, has been suggested to be hepatoprotective.

Relating to the 2013 liver injury outbreak in Hawai'i, Dr. Gershwin may testify that although attention appeared to focus on aegeline, no common toxicity theme appeared between individual patients. Dr. Gershwin may testify that there are no data suggesting that aegeline uncouples oxidation or other metabolic pathways. Similarly,

there are no data suggesting the chemical similarity of aegeline on drug metabolic pathways or inhibition of a specific cytochrome pathway, or that aegeline alters electrolyte balance or any ion channel.

Dr. Gershwin is also expected to testify as to the absence of a complete statistical and epidemiological methodology, and the resulting statistical pitfalls apparent in the alleged correlation between the consumption of OEP NF and liver injury. His expected testimony will also address data analysis errors that are commonly encountered in medicine, in which data becomes confounding and leads to incorrect interpretations. These errors are of particular concern when making a correlation, such as the alleged correlation between consumption of OxyElite Pro and liver failure. These errors may improperly suggest an association when no controls are used.

There were at least four errors present in the data analysis done regarding the correlation of OEP NF and liver injury. *First*, the analysis suffered from selection bias, which occurs when some individuals are chosen for a study above others, thus leading to discrimination or bias. Here, Dr. Gershwin is anticipated to testify that no attempt was made to look at the incidence of acute liver failure in similar populations in Hawai'i. *Second*, it suffered from exclusion bias, which occurred when patients with acute liver failure, but who did not take OEP NF, were excluded from the study parameters. *Third*, it suffered from observer bias, which occurs when scientists or doctors continue to use the same diagnosis as originally proposed without independent evaluation of the underlying data, and which occurred with data in the Hawai'i outbreak. *Fourth*, it suffered from detection bias, which occurred when evaluators examined individuals who consumed OxyElite Pro with liver failure, but did not examine individuals who consumed

OxyElite Pro, but who did not have liver failure. Dr. Gershwin is expected to testify that these statistical errors may lead to incorrect interpretations of data.

Dr. Gershwin is also expected to testify on other inconsistencies in the data of individuals with reported liver injury from the Hawai'i "outbreak." First, there was a lack of temporal association between symptom onset and consumption of OEP NF. In some patients, other substances had greater temporal association than did OEP NF. There was also an absence of consistency within case reports; that is, patients had different presentations in their symptoms. There was also an absence of plausibility within case reports, which refers to the absence of a mechanism of action, or logic, between the individuals with liver injury, and the alleged cause of the liver injury, here OEP NF.

Finally, Dr. Gershwin may discuss the absence of careful and complete consideration of alternative etiologies for the liver injury purportedly suffered by the Hawai'i patients, and the absence of appropriate medical, experimental, or animal data to support the conclusion that consumption of OEP NF was associated, directly or indirectly, with liver failure.

Materials on which Dr. Gershwin's expected testimony will rely:

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2. 2008. Risky pills: supplements to avoid. Consum Rep 73:46-47.
3. 2010. Dangerous supplements: what you don't know about these 12 ingredients could hurt you. Consum Rep 75:16-20.
4. 2015. Anti-Aging Treatment Claims: the Promises vs. the Science. Consum Rep 80:15-17.
5. (CDC), C. f. D. C. a. P. Acute hepatitis and liver failure of unknown etiology in Hawaii - 2013: Report of a cluster investigation.
6. (CDC), C. f. D. C. a. P. 2015. Trichinellosis surveillance - United States, 2008-2012. Morbidity and Mortality Weekly Report.

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4. Robert D. Gibbons, Ph.D.
Chicago, IL

Dr. Gibbons is a statistician with extensive experience in the design and analysis of randomized clinical trials and observation studies. A copy of his *curriculum vitae* is attached as **Exhibit 5**. Dr. Gibbons is the Blum-Riese Professor of Biostatistics in the Departments of Public Health Sciences, Medicine, and Psychiatry, at the University of Chicago, where he also directs the Center for Health Statistics. Dr. Gibbons is an elected member of the National Academy of Medicine of the National Academy of Sciences (formerly the Institute of Medicine) and served on the Institute of Medicine Committee on U.S. Drug Safety. He has a Ph.D. in Statistics and Psychometrics from the University of Chicago.

Dr. Gibbons' anticipated testimony in this case will be based on his expertise and experience. Dr. Gibbons reviewed the published literature on the alleged outbreak of acute hepatitis and liver failure cases in Hawai'i. He has also reviewed private and public medical claims data for the United States population as well as USPlabs sales data. Based on his review of certain material, Dr. Gibbons is expected to provide a statistical analysis of the frequency of liver injury before and after the introduction of aegeline to OxyElite Pro (*i.e.*, OEP New Formula), and to opine on the probability of a causal link between the alleged outbreak of liver injury in Hawai'i and the consumption of OEP New Formula. He is also expected to testify regarding whether there was any association between OEP New Formula per capita sales and the rate of acute hepatitis and liver failure.

Additionally, Dr. Gibbons' testimony is anticipated to include an analysis of the use of the FDA MedWatch system to assess the presence or absence of a causal link between OEP New Formula and liver injury. Dr. Gibbons is also expected to testify to his conclusion that the outbreak of acute hepatitis and liver failure observed in Hawai'i was not due to the inclusion of aegeline in OEP NF. A copy of Dr. Gibbons' published article examining the alleged association between OEP NF and liver injury suggested by the data in Hawai'i and a small number of spontaneous adverse reports in the mainland United States titled "*OxyELITE Pro and liver disease: Statistical assessment of an apparent association*" is attached as **Exhibit 6**.

Materials on which Dr. Gibbons' expected testimony will rely:

- CDC. Acute hepatitis and liver failure of unknown etiology in Hawaii – 2013: Report of a cluster investigation. Health Studies Branch, Division of Environmental Hazards and Health Effects, National Center for Environmental Health (NCEH), Centers for Disease Control and Prevention (CDC), 2014.

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5. **Robert G. Gish, M.D.**
   San Diego, CA

Dr. Gish is a medical clinician specializing in transplant hepatology, hepatology and gastroenterology. A copy of Dr. Gish's *curriculum vitae* is attached as **Exhibit 7**. Dr. Gish holds an M.D. from the University of Kansas and completed a fellowship in gastroenterology and hepatology as well as transplant medicine at the University of California, Los Angeles. During his tenure at UCLA he received the Physician Scientist Award from the National Institute of Health in toxicology. He has over 28 years of experience as a clinician and a clinical investigator in the realm of liver injury, liver disease, liver transplant and liver cancer, and had additional training in toxicology in pharmacy school at the University of Kansas and in an externship with a clinical toxicologist. Dr. Gish is a Medical Doctor and is a Consulting Clinical Professor of

Medicine at Stanford University, as well as a Clinical Professor (Adjunct) at the University of Nevada in Las Vegas.

Dr. Gish's anticipated testimony in this case will be based on his expertise and experience. Dr. Gish has analyzed medical records, treatment, and the medical history of a number of patients alleged to have been harmed by OEP NF. Dr. Gish has reviewed certain documents produced by state and federal agencies as well as medical and scientific literature and clinical studies. He has also reviewed product specification sheets and product labels for OEP NF. Dr. Gish is expected to testify, based on his review of certain documents and his expertise and experience, regarding the safety of OEP NF, including whether certain of its components produce hepatotoxic effects in animals or humans. Dr. Gish is also expected to explain the bases of his opinions as well as provide case evaluation tools and a framework of the differential diagnosis process for hepatitis of unknown etiology. Dr. Gish may also testify regarding an investigation and report by the Centers for Disease Control and Prevention regarding acute hepatitis and liver failure of unknown etiology in Hawai'i in 2013 and may also offer alternative etiologies to explain the alleged injuries in Hawai'i patients claiming to have consumed OxyElite Pro. Dr. Gish will also be responding to Dr. Herbert L. Bonkovsky's expected testimony, including any testimony regarding the appropriateness of methodologies used to assess causality and HEV antibody testing.

Dr. Gish's expected testimony will rely largely upon the medical records of patients on which the Government's case-in-chief on Count 10, including Dr. Bonkovsky's expert testimony, will be based. Those patients have not yet been identified for Defendants.

6. **Judith K. Jones, M.D., Ph.D.**
Fairfax, VA

Dr. Jones is an expert in pharmacovigilance and has extensive experience in drug safety, spontaneous reporting, regulatory and safety compliance, and epidemiology. A copy of her *curriculum vitae* is attached as **Exhibit 8**. Dr. Jones has an M.D. from Baylor College of Medicine and a Ph.D. in Pharmacology from the University of California, San Francisco. Dr. Jones previously worked at the U.S. Food and Drug Administration (FDA), serving as the Director of what is now the Office of Safety & Epidemiology for five years. Among her teaching experiences, Dr. Jones taught clinical pharmacology and medicine at Georgetown University Medical Center and Pharmacoepidemiology at the University of Michigan School of Public Health, the Tufts University Medical School, and Université Claude Bernard Lyon, Eudipharm, in Lyon, France. She is currently the President of the Degge Group, which is part of the Pharmalex Group, a drug, device, and biologic safety research and information company that offers worldwide consulting related to adverse drug and dietary supplement reactions and pharmacoepidemiology.

Dr. Jones' anticipated testimony in this case will be based on her expertise and experience. Dr. Jones may testify about the difficulty in determining the cause of acute liver failure in the United States generally, due in part to the myriad potential contributing factors, such as alcohol consumption, various infections and diseases, environmental hazards, and various common foods and supplements.

Dr. Jones has reviewed peer-reviewed scientific literature about the effects of aegeline, case reports of adverse events, and adverse events reported that have occurred in individuals using OEP NF. Dr. Jones may testify, based on her review of these

documents and her expertise and experience, regarding the FDA's adverse events surveillance program.

Dr. Jones' testimony may also include an analysis of federal and state action following a spontaneous report regarding patients from Hawai'i alleging liver injury caused by OEP NF in 2013. In particular, Dr. Jones may testify about the use of the spontaneous reports database by the FDA and other regulators to assess causation between OEP NF and reports of liver injury. Dr. Jones may testify as to the rigor of data collection and information in spontaneous reports, the availability of data on exposure to other common causal factors in liver injury, and the availability of other explanatory data relating to the adverse event, such as its onset, characteristics, or time course. Dr. Jones' testimony may also include discussion of the relationship between the spontaneous reporting of liver injury involving OEP NF and the publicity surrounding OEP NF contemporaneous to that reporting.

Dr. Jones is anticipated to testify to her opinion that the FDA and other regulators performed their investigation of OEP NF by beginning with the assumption that OEP NF was hepatotoxic, and that the searches of the spontaneous reports database sought evidence of hepatotoxicity with OEP NF specifically, rather than examining all cases of hepatotoxicity and looking for a potential cause. Dr. Jones may testify that investigators' work was thus intrinsically biased by their assumption that OEP NF is hepatotoxic.

Finally, Dr. Jones is anticipated to provide an appropriate methodology to assess potential causes of liver injury from a pharmacovigilance perspective.

Materials on which Dr. Jones' expected testimony will rely:

Relevant Medical Literature authored/co-authored by Judith K. Jones:

1. Jones JK. Suspected drug-induced hepatic reactions reported to the FDA's adverse reaction system: an overview. Semin Liver Dis. 1981 May;1(2):157-67.

2. Jones JK. Adverse drug reactions in the community health setting: approaches to recognizing, counseling and reporting. *Fam Community Health* 1982 Aug; 5(2):58-67.

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6. Jones JK. Discussion panel: the future of causality assessment: is it wise: will it help? what effect could it have on the analysis of clinical trial data or in pharmacoepidemiology. *Drug Inf J* 1986; 20:551-562.

7. Jones JK. A Bayesian approach to causality assessment. *Psychopharmacol Bull* 1987; 23(3):395-399.

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7. **Haavi Morreim, Ph.D., J.D.**
Memphis, TN

Dr. Morreim is a professor with extensive experience in medical ethics. A copy of her *curriculum vitae* is attached as **Exhibit 9**. Dr. Morreim has a Ph.D. in Philosophy (aos: Philosophy of Law) from the University of Virginia and a J.D. from the University of Memphis School of Law. She currently serves as a Professor at the University of Tennessee Health Sciences Center, College of Medicine's Department of Internal Medicine and as an Adjunct Professor at the University of Memphis' Cecil C. Humphreys School of Law. She also has more than 14 years of experience as a member of the Institutional Review Board at the University of Tennessee Health Science Center, and serves on the board of several journals related to ethics and accountability in scientific research.

Dr. Morreim's anticipated testimony in this case will be based on the above-stated experience, her related expertise, relevant legal and scientific literature, and documentation relating to research and scientific analysis conducted in connection the alleged outbreak of liver injury in Hawai'i. Dr. Morreim is expected to testify on two general topics. First, she will testify about the generally applicable ethical standards of scientific research, the principles of scientific integrity, and federally identified procedures for addressing research misconduct. Second, she will discuss how those principles and processes apply to the research conducted by certain physician-researchers working at the Queen's Medical Center (the "QMC Research Team") in Honolulu, Hawai'i, who claimed to have determined that OEP NF was the cause of an alleged outbreak of acute liver injuries in 2013.

Regarding the first topic, Dr. Morreim is expected to testify on the definition of "scientific research," concluding that the QMC Research Team was engaged in scientific research, hence can appropriately evaluated according to the standards of scientific integrity in research. She will then describe those standards and how they have emerged over time in response to crises of accountability in science. Although research integrity standards emanate from the scientific community, they have also been codified by the federal government, which requires compliance by entities receiving federal research funding. One such entity is the University of Hawai'i (UH), which has both adopted and supplemented the federal standards governing research integrity. Because members of the QMC Research Team are employed by or associated with UH, the University's more exacting standards are applicable to them. UH's standards encompass related codes of research conduct promulgated by professional associations, including the American Medical Association and the American College of Physicians.

Dr. Morreim may also testify generally about the process that research institutions follow in order to determine whether a given course of conduct violates the ethical standards of scientific research. This testimony will include discussion of the kinds of harm that may arise from such violations and the kinds of sanctions and/or remedies that may be applied when there has been a finding of misconduct. Dr. Morreim's expected testimony in this area will also explain why the relevant research integrity standards apply to all the various methods by which covered scientific research is disseminated to the public, including, but not limited to (1) communications with the general news media, and (2) publication in peer-reviewed scientific journals.

Regarding the second topic, Dr. Morreim is expected to testify that the QMC Research Team appear to have violated the applicable standards of scientific integrity promulgated by the federal government and by UF in at least four distinct ways. First, Dr. Morreim may testify about the marked discrepancies between the case report forms ("CRFs") created by the QMC Research Team and the underlying medical data purportedly used to populate those documents, and how those discrepancies support a conclusion that the QMC Research Team engaged in scientific misconduct. Her testimony in this area will include, but not be limited to, discussion of (1) how the QMC Research Team may have directly fabricated data included in the CRFs, (2) how the CRFs omitted data from the medical records that, if properly included, would have directly contradicted the conclusions of the QMC Research Team, and (3) how the QMC Research Team failed to verify basic data points (such as whether a given patient actually purchased and ingested OEP) listed in the underlying medical records. Dr. Morreim is also expected to compare the QMC Research Team's CRF-related misconduct to a recent similar case in the state of Oregon, in which the federal government's Office of Research Integrity concluded that a researcher had committed misconduct by falsifying information in CRF forms.

Second, Dr. Morreim is expected to testify that the QMC Research Team misused of the Roussel-Uclaf Causality Assessment Method ("RUCAM") in order to improperly bolster the conclusion that OEP was the cause of an alleged outbreak of acute liver injury in 2013. Her testimony in this area will include, but not be limited to, discussion of (1) the fact that the QMC Research Team assigned Dr. Marina Roytman – the member with the least experience in hepatology – to conduct the RUCAM analysis, despite the fact that

conducting such an analysis requires substantial expertise and experience in hepatology, (2) that fact that Dr. Roytman rated several RUCAM factors as positive, despite lacking the data to support her action, and most importantly (3) the fact that Dr. Roytman, during the course of civil litigation, admitted to intentionally changing RUCAM causality scores because she "felt that several of them should have been higher." The factual basis of Dr. Morreim's discussion of this topic will be largely drawn from the published work of Dr. Rolf Teschke.

Third, Dr. Morreim is expected to testify regarding the QMC Research Team's premature efforts to promote to news media its hypothesis that OEP caused the alleged outbreak of acute liver injury in 2013, despite heavy internal and external concerns about the scientific soundness of the theory. Her testimony in this area will include, without limitation, (1) the concerns expressed by QMC's Chief Executive Officer about the QMC Research Team's communicating with the news media before proving its hypothesis, and (2) the concerns expressed by the Hawai'i Department of Health about publicly identifying a specific "etiological agent" based on the QMC Research Team's "biased selection" criteria. Relatedly, Dr. Morreim will also testify that the QMC Research Team's efforts to publicize their OEP hypothesis – prior to adequate verification – included incorrect reports in the news media that individuals suing USPlabs were "previously healthy," when, in fact, they were not.

Fourth, Dr. Morreim is expected to testify about the QMC Research Team's inappropriate attribution of authorship, e.g., to Dr. Naoky Tsai. Her testimony in this area will include, but not be limited to (1) explaining why it was inappropriate to identify Dr. Tsai as an author an article produced by the QMC Research Team, and (2) explaining

how Dr. Tsai – a Board-certified hepatologist – failed to provide adequate oversight for that article, and (3) how that failure may have exacerbated the problems caused by the articles' use of incorrect and perhaps fabricated data, as well as Dr. Roytman's misuse of the RUCAM system.

In addition to reviewing the integrity standards of scientific research and applying them to the misconduct of the QMC Research Team, Dr. Morreim is also expected to testify regarding another requirement for a finding of scientific misconduct: that the inappropriate activity be knowing, intentional, or reckless. Specifically, Dr. Morreim will testify that, for various reasons, it is more likely than not that the QMC Research Team's conduct can satisfy each of these criteria (although only one criterion need be met for a finding of misconduct). Some of the relevant indicators include: (1) the Team failed to follow guidelines in the field of liver disease for excluding potential alternative causes – guidelines that are well-established and with which they have acknowledged familiarity; (2) Team members falsely and publicly claimed to have conducted certain forms of testing, only to retract those claims when testifying under oath; (3) acnowledgment under oath that RUCAM scores had been changed to fit the investigators' expectations instead of matching the data; and (4) failure to preserve important research records so that they could be available for subsequent review.

Finally, Dr. Morreim is also expected to testify about the kinds of sanctions and/or remedies that the University of Hawai'i would be entitled to, and likely would impose on the QMC Research Team as a result of the research misconduct described above. Specifically, Dr. Morreim will testify that a finding of research misconduct – that is, violations of the ethical standards governing scientific research – would suffice to

move the University of Hawai'i to request retractions all of the published work of the QMC Research Team related to the alleged outbreak of acute liver injury in 2013. Dr. Morreim will also testify that these retractions would negatively impact the reliability of the published work of other researchers who relied on the findings of the QMC Research Team, and that further retractions, or in other cases erratum-statements by other research institutions, might be required as well.

Materials on which Dr. Morreim's expected testimony will rely:

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45 CFR 46.
45 CFR 46.102(d).
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Asherin Ryan misconduct findings; ORI Case Summaries, http://ori.hhs.gov/content/case-summary-asherin-ryan

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Depositions from Straub, et al. v. USPlabs LLC et al: Kenneth Waikiki, Aukele Waikiki, Marina Roytman, MD, Linda Wong, MD, Naoki Tsai, MD, Keahi Canace Pavao

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Expert reports provided for Straub, et al. v. USPlabs LLC et al.: by Christopher J. Borgert, PhD, Eric Gershwin, MD; Robert Gibbons, PhD, Robert Gish, MD, Helmut Jaeschke, PhD, Joseph Rodricks, PhD, and Noel Weiss, MD, DrPH.

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Letter from Peter Barton Hutt and Matthew Jon Hegreness (Covington & Burling) to William Correll, Director of the Office of Compliance for the FDA's Center for Food Safety and Applied Nutrition, May 9, 2016

Letter to Kevin W. Herring, September 30, 2015, providing evidence for benefit from the fruit of the Aegle Marmelos tree, particularly in aiding digestion, and highlighting reasons why this fruit and its components are highly unlikely to cause liver injury

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8. **Kirk L. Barnes**
   Atlanta, GA

Mr. Barnes is a consultant and the former Vice President of Business Development at TransPharMed, a consulting group focused on advancing sales solutions in the life sciences and healthcare IT markets. His expert qualifications are described in his *curriculum vitae*, which is attached as **Exhibit 10**. He has over 20 years in the life sciences, including 5 years as a solutions provider in the global anti-counterfeiting for

pharmaceutical and over-the-counter medicines. He is also a former board member of The International Authentication Association, providing guidance to industry and government agencies around the world regarding anti-counterfeiting strategies.

Mr. Barnes' anticipated testimony in this case will be based on his expertise and experience. Mr. Barnes is anticipated to testify regarding anti-counterfeiting solutions and strategies based on his experience and expertise. He is expected to testify regarding his opinion as to the likelihood of sales of counterfeit OEP NF in Hawai'i and elsewhere during the relevant time period. Mr. Barnes' testimony is also anticipated to include USPlabs' investigation of possible counterfeit product on the market, its subsequent reporting of these issues to federal and state officials, and the appropriateness of these officials' response to the reports.

9. **Paul S. Simone, Jr., PhD.**
Memphis, TN

Dr. Simone currently serves an associate professor of chemistry at the University of Memphis, and previously served as a tenure-track professor at The Citadel, The Military College of the South. His expert qualifications are described in his *curriculum vitae*, which is attached as **Exhibit 11**. Dr. Simone obtained a Bachelor of Science degree in Chemistry, as well as Master of Science and Ph.D. degrees in Analytical Chemistry, all from the University of Memphis. Dr. Simone has extensive experience in analytical chemistry and specializes in developing sample preparation, sample handling, and chemical analysis methods for compounds that are federally regulated in the United States at the 1-100 parts per billion ("ppb") level. Moreover, he has published an article in a peer-reviewed scientific journal applying the principles of analytical chemistry to the

analysis of extracts of the *pelargonium graveolens* plant, commonly known as rose geranium.

Dr. Simone's anticipated testimony in this case will be based on his expertise and experience in analytical chemistry, and will fall into three general areas. First, Dr. Simone may testify regarding the general principles of analytical chemistry, including how they can be used to determine whether a specific chemical compound is present in (or absent from) a given matrix. Second, Dr. Simone may testify regarding his published, peer-reviewed work that used principles of analytical chemistry to determine that 1,3-dimethylamylamine ("DMAA") is a naturally occurring constituent of the *pelargonium graveolens* plant, as well testify as the work of others on the same subject. Third, Dr. Simone may respond to the proposed expert testimony of Dr. Nicholas H. Oberlies – the Government's proposed expert on "the field of pharmacognosy" – related to the topic of chirality.

Regarding the first area, Dr. Simone will explain that analytical chemists have a variety of different methods to determine whether a given matrix contains a specific chemical compound, including, but not limited to, gas chromatography, tandem mass spectrometry, high-performance liquid chromatography, and nuclear magnetic resonance spectroscopy. His testimony in this area will include, without limitation, (1) explaining the strengths and weaknesses of these methods, and (2) describing how analytical chemists choose which method to use for a given task.

Dr. Simone will also testify about scientifically accepted measures that analytical chemists use to counteract so-called "matrix effects" – that is, the effect that background materials in a given sample may have on the ability of the analytical chemist to detect a

desired chemical compound. His testimony in this area will include, but not be limited to (1) a discussion of external calibration curves, and (2) a discussion of the "standard addition" method.

Regarding the second area of his expected testimony, Dr. Simone will testify about how his laboratory used the general principles of analytical chemistry – specifically, high-performance liquid chromatography with tandem mass spectrometry – to positively determine that DMAA existed in *pelargonium graveolens*, and was detectable at concentrations in the range of 94 ppb to 254 ppb. His testimony in this area will include discussions of (1) how his laboratory verified that the tested samples of *pelargonium graveolens* were uncontaminated during analysis, (2) the extraction method his laboratory used, and why careful extraction methods are important to the accurate detection of chemical compounds at low concentrations, (3) the work of other, independent laboratories that detected DMAA in *pelargonium graveolens*.

Dr. Simone will testify about the work of other analytical chemists – some of whom received funding from the U.S. Food and Drug Administration, the U.S. Anti-Doping Agency, and other public and quasi-public entities – who purportedly determined that DMAA was not present in *pelargonium graveolens*. This testimony will include, without limitation, discussions of (1) why the work of these analytical chemists does not mean that the work conducted in Dr. Simone's laboratory was incorrect, (2) how to resolve conflicting conclusions reached by separate well-designed and well-executed experiments, and (3) why the work of this group of analytical chemists is open to methodological criticism. This testimony will include discussion of evidence of potential detections of DMAA in *pelargonium graveolens* by researchers affiliated with Dr.

Mahmoud A. ElSohly (the Government's proposed expert in "the field of natural products analytical chemistry," *see* Gov. Notice at 14) that was not included in their published research, as well as discussion of problems with the sample preparation methods used by Dr. ElSohly and his team.

Regarding his third area of testimony, Dr. Simone will explain the principles of chirality and how they relate to the broader principles of analytical chemistry. Specifically, Dr. Simone may testify about (1) methods used to separate the different chiral forms (also known as stereoisomers) of a given molecule, and (2) the ratios of DMAA stereoisomers detected in *pelargonium graveolens* samples and in commercially-available synthetic standards of DMAA. Based on these and other subjects, Dr. Simone will testify that the synthetically-derived DMAA used in dietary supplements designed and distributed by USPlabs was stereoisomerically equivalent to the DMAA that his laboratory detected in samples of *pelargonium graveolens*.

Dr. Simone may also offer rebuttal testimony to the proposed testimony of Dr. Oberlies "on the extraordinarily infinitesimal possibility that all four isomers [of DMAA] are made in a plant (if at all)." Specifically, Dr. Simone will testify that preliminary results of experimental work in his laboratory detected all four isomers of DMAA in *pelargonium graveolens* using standard methods of analytical chemistry.

Finally, Dr. Simone may also testify that the tools of analytical chemistry cannot be used in isolation to determine whether different stereoisomer forms of a given molecule will exhibit different biological activity in humans. For this and other reasons, Dr. Simone will testify that Dr. Oberlies' proposed testimony inappropriately implies that the anecdotal differences between the stereoisomers of certain molecules that USPlabs

did not include in its dietary supplements (i.e. carvone and thalidomide) can be used to draw specific conclusions about potential differences between the stereoisomers of molecules that USPlabs **did** use in its dietary supplements (i.e. DMAA and aegeline).

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10. Joseph Rodricks, Ph.D., DABT
Arlington, VA

Dr. Rodricks is a consultant in toxicology and human health risk assessment and a founding Principal at Ramboll Environ US Corporation. He is also a Visiting Professor in toxicology and risk assessment at the Johns Hopkins Bloomberg School of Public Health. A copy of his *curriculum vitae* is attached as **Exhibit 12**. Dr. Rodricks has a Ph.D. in Biochemistry from the University of Maryland and was a post-doctoral scholar

at the Department of Biochemistry at the University of California at Berkeley. He also has a B.S. in Chemistry from the Massachusetts Institute of Technology.

Before his work with Environ, Dr. Rodricks was an FDA laboratory scientist for 7 years, where he conducted research on toxic substances regulated by the FDA, a Reviewing Toxicologist and Risk Assessor in the FDA's Bureau of Foods, and later the FDA's Deputy Associate Commissioner for Science. In this latter position, Dr. Rodricks provided direct scientific advice to the FDA Commissioner on a wide variety of pharmaceutical, medical device, biological product, and food-related issues, and specialized in risk assessment and the use of toxicology studies to make safety and regulatory decisions.

Dr. Rodricks' expected testimony in this case will be based on his expertise and experience at the FDA and Environ, his review of scientific literature on USPlabs products and 1,3-dimethylamylamine ("DMAA"), and his work with Environ studying the effects of aegeline in human and animal models.

Dr. Rodricks is expected to testify to the safety of DMAA based on his experience, and his review of the available literature on DMAA. He has reviewed studies by Dr. Richard Bloomer at the University of Memphis, which examined DMAA alone, with caffeine, and in two DMAA-containing products produced by USPlabs, OEP and Jack3d, across eight different studies that evaluated both single exposure and longer-term exposures to DMAA or DMAA containing supplements.

Dr. Rodricks is expected to testify to studies that examined the effects of single exposures to DMAA, caffeine, DMAA and caffeine, or USPlabs products containing DMAA and caffeine. He is expected to testify regarding a study that investigated the

effect of DMAA and caffeine on resting hemodynamic properties and endogenous sympathetic catecholamine levels for up to two hours after dosing. Participants consumed 250 mg caffeine, 50 mg DMAA, 75 mg DMAA, or caffeine in combination with DMAA at the two dosage levels. After 60 minutes, systolic blood pressure increased in all treated groups, with DMAA intake alone at 50 mg resulting in a similar blood pressure increase to caffeine alone at 250 mg, while norepinephrine and epinephrine levels remained relatively unaffected. In this study,75 mg DMAA or in combination with caffeine produced higher systolic values than caffeine alone. However, combining DMAA with caffeine resulted in similar increases in diastolic pressure to caffeine alone.

Dr. Rodricks is also expected to testify regarding a pharmacokinetic study on DMAA and caffeine's potential impact on exercise performance in a 10-kilometer run. Participants in that study ingested DMAA at 1 mg per kilogram, caffeine at 4 mg per kilogram, or caffeine and DMAA in combination at the same dosage. Blood samples taken before and after the run were analyzed for glycerol, free fatty acids, malondialdehyde, nitrate/nitrite, Trolox Equivalent Antioxidant Capacity, heart rate, perceived exertion, and vigor. A combination of DMAA at 1 mg per kilogram and caffeine at 4 mg per kilogram, a dose level approximately equivalent to the maximum label dose of USPlabs products, did not significantly change physical performance, level of exertion, subject mood or vigor, heart rate, or blood pressure endpoints in the study participants.

Dr. Rodricks is also expected to testify to a study that examined the effect of single doses of OEP on the hemodynamics of healthy adults up to two hours after

ingestion. At 60 minutes after ingestion, participants' heart rates increased by 8-11 beats per minute. Dr. Rodricks may also testify that systolic blood pressure increased by an amount similar to that of 250 mg of caffeine, or the equivalent of two 8-10 ounce cups of coffee.

Dr. Rodricks is expected to testify regarding a study that evaluated hemodynamic variables and forehead temperature of healthy male participants over a 24-hour period following a single 25 mg oral intake of DMAA. Although mean heat rate and mean temperature both significantly increased, they were well within normal values, and were explained by increases in normal daily activities by study participants. DMAA levels reached their peak at 3.6 hours following ingestion, with a mean half-life of 8.4 hours.

Dr. Rodricks is expected to testify that the single-exposure studies described above show transient increases in systolic blood pressure from 12% to 18% 30 to 120 minutes after ingestion. Those increases returned to baseline values after 30 to 90 minutes. Other clinical markers, such as blood plasma levels of epinephrine or norepinephrine, were not significantly different after ingestion of DMAA, caffeine, or DMAA and caffeine.

Dr. Rodricks is also expected to testify to studies that examined the effects of DMAA alone and with caffeine when ingested daily for longer-term periods. These studies evaluated a total of 123 healthy, young participants who consumed DMAA alone or in combination with caffeine daily for 2, 8, 10, or 12 weeks, in dosages between 0.3 and 0.8 mg per kilogram, and between 1.3 and 4.9 mg per kilogram, for DMAA and caffeine, respectively.

Dr. Rodricks is expected to testify regarding a study that investigated the hemodynamic, hematological, and clinical chemistry effects of OxyElite Pro after single and 14-day dosing. Participants consumed approximately 0.6 mg per kilogram of DMAA per day, and approximately 3 mg per kilogram of caffeine per day. The study found no significant differences in acute changes in systolic pressure, heart rate, diastolic pressure, or rate pressure between day 1 and day 14. Further, no significant changes in hemodynamic endpoints were reported between day 1 and day 14. A comparison of day 1 and day 14 found no effect on any measured blood test variable, including blood counts, lipid, and metabolic panels.

Dr. Rodricks is expected to further testify to a study that investigated the hemodynamic, hematological, and clinical chemistry effects of Jack3d after single and 14 day dosing. In that study, participants consumed the equivalent of two scoops of Jack3d each day for 14 days, or the equivalent of approximately 0.5 mg per kilogram of DMAA per day, and 3 mg per kilogram of caffeine each day. The study found no significant difference in acute changes in heart rate, diastolic pressure, or rate pressure product on days 1 or 14. Moreover, no significant changes were observed in hemodynamic endpoint measures or measured blood test variables, including blood counts, lipid, and metabolic panels.

Dr. Rodricks is also expected to testify regarding a study that examined the effect of daily 8-week exposure to OEP on hemodynamic, hematological, and clinical chemistry endpoints. Participants consumed between 0.3 to 0.5 mg per kilogram, and 1.3 to 2.6 mg per kilogram, of DMAA and caffeine, respectively. The study found no differences between treatment groups or pre- or post-study values for systolic or diastolic blood

pressure. Further, the study found no clinically relevant differences between treatment groups or across time in hematology, lipid, or metabolic panel endpoints.

Dr. Rodricks is expected to testify to a 10-week study in which groups of 12 or 13 healthy adult males consumed Jack3d daily prior to exercise approximately 4 days per week for 10 weeks. The dosage was approximately 0.3 to 0.8 mg per kilogram and 1.6 to 4.9 mg per kilogram of DMAA and caffeine, respectively. Consumption of Jack3d according to its directions for 10 weeks did not result in any clinically relevant differences between treatments groups or across time in systolic or diastolic blood pressure, hematology, lipid, or metabolic panel endpoints.

Dr. Rodricks is also expected to testify to a 12-week study in which 50 young, healthy men consumed 250 mg caffeine, 50 mg DMAA, or caffeine and DMAA together. Within groups and between groups, and as compared to the placebo group, the study found no significant change in any cardiorespiratory parameter or biomarker. The only significant change was that at week 6, urine pH was significantly lower than pre-study values, although at week 12, urine pH was equivalent to the baseline in the caffeine and DMAA group.

Dr. Rodricks is expected to testify that, across all longer-term studies, no clinically relevant differences were reported in resting heart rate or blood pressure. Many of the longer-term studies examined but did not find changes in clinical hematology, liver function, lipid panels, other cardiovascular effects, urinalysis, blood markers for oxidative stress, inflammation, cardiac muscle damage, or electrocardiography. The studies found no reported differences in required run time, perceived exertion, or self-reporting of mood and vigor.

Overall, Dr. Rodricks is expected to testify that (1) the single exposure and longer-term studies provide evidence of the safety of DMAA at intakes ranging from 25 mg to 50 mg as a single ingredient or in combination with caffeine and creatine, (2) the transient effects of DMAA and caffeine on blood pressure and heart rate were strikingly consistent, with no long-term changes observed, and (3) the variation in measured endpoints in all studies was quite low, thus adding confidence to the studies' findings despite the relatively small number of study subjects used.

Dr. Rodricks is also expected to testify regarding the safety of aegeline. He is expected to testify about a study by Environ in which Sprague-Dawley rats were administered doses of 0, 400, 800, or 1200 mg per kilogram of aegeline per day. The study found no aegeline-related deaths or clinical observations, no effects on food consumption, and only transient, and not dose-related, alterations in body weight gain. The study further found no aegeline-related alterations in hematology and coagulation parameters, other than an increased red cell distribution width in high dose males, and an increased hemoglobin distribution width in females. However, the increased red cell distribution width and hemoglobin distribution width changes were not accompanied by changes in any other related erythron parameters, and thus were not considered toxicologically relevant. The study found no aegeline-related effects on urinalysis parameters, and the only serum chemistry finding was a modest, nonadverse aegeline-related increase in serum albumin concentration in males, but not females.

Notably, the study found no effects on liver-related clinical chemistry findings. Absolute and relative liver weights increased by 15% to 25% in males, but not in females, and three high-dose animals were diagnosed as having grossly swollen livers,

although the weights of these individuals' livers were not higher than the mean group weights. Dr. Rodricks is expected to testify that these liver weight effects were not accompanied by any histopathological or clinical chemistry findings indicative of liver toxicity. By consequence, these liver effects are considered reflective of a metabolic response rather than an indication of toxicity, and are thus considered nonadverse.

Dr. Rodricks is expected to testify that the study revealed no adverse effects in Sprague-Dawley rats up to the maximum studied dose of 1,200 mg per kilogram per day, where even the lowest studied dose was 10 times higher than the scaled human equivalent dose of aegeline from dietary supplements.

Dr. Rodricks is also expected to testify regarding the FDA's traditional ingredient-by-ingredient approach to the assessment of the safety of dietary supplements, and the difficulties inherent in evaluating complex mixtures or whole products, as compared to evaluating the constituent ingredients of a product as a method of evaluating the safety of the whole product.

Finally, Dr. Rodricks may testify to the validity and methodology of the pre-clinical mouse studies cited by the Government relating to the alleged toxicity of OEP NF.

Materials on which Dr. Rodricks' expected testimony will rely:

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11. William J. Brock, Ph.D. DABT, Fellow ATS
Montgomery Village, MD

Dr. Brock has over 30 years of experience as a toxicologist, manager, and consultant for research and development in the pharmaceutical, consumer product, food, medical device, and chemical industries. His expert qualifications are described in his

curriculum vitae, which is attached as **Exhibit 13**. He has extensive experience in evaluating clinical and product safety data and designing, conducting, interpreting, and reporting on nonclinical safety program studies. He also has extensive experience in labeling and other regulatory and compliance issues and conducting risk and safety assessments. Dr. Brock received his Ph.D. in Toxicology from the University of Kentucky.

Dr. Brock's anticipated testimony in this case will be based on his expertise and experience. Dr. Brock is expected to testify regarding the appropriate methodology for designing, interpreting, and reporting nonclinical safety studies. He is anticipated to directly respond to the expected testimony of Drs. Gurley, Koturbash, and Boerma by evaluating the design and methodology of their pre-clinical mouse studies reported and by analyzing the results therefrom.

12. Stephen Scheets, CPA
Dallas, TX

Mr. Scheets is a Certified Public Accountant and a Certified Management Accountant. His expert qualifications are described in his *curriculum vitae*, which is attached as **Exhibit 14**. He obtained a Bachelor of Science degree in Accounting from the University of Missouri. Mr. Scheets was a Special Agent at the Internal Revenue Service Criminal Investigation Division for 20 years and currently works at an investigative firm specializing in forensic accounting.

Mr. Scheets' anticipated testimony in this case will be based on his expertise and experience. Mr. Scheets has reviewed relevant account and sales records for USPlabs, LLC ("USPlabs"). He will testify regarding his analysis of sales data, particularly as they relate to the total sale and gross profits of products containing DMAA, aegeline and

Cynanchum. His testimony may also include a review of sales distribution among various domestic customers. Mr. Scheets may also testify as to the amount and nature of transactions USPlabs and its principals made between 2008 through 2015 that are the subject of Count 11 of the First Superseding Indictment.

Additionally, Mr. Scheets may respond to any testimony given by Ms. Tucker in this case.

13. James Lassiter
Laguna Beach, CA

Mr. Lassiter is the founder and Chief Operating Officer of Ingredient Identity, a firm providing regulatory management consulting services to food, dietary supplement, cosmetic, and homeopathic companies. His expert qualifications are described in his *curriculum vitae*, which is attached as **Exhibit 15.** He obtained Bachelor of Science and Master of Science degrees in Chemistry and Biochemistry from the University of California at Berkeley, and a Master of Business Administration in General Operations from Pepperdine University. In addition to his consulting experience, he has served the Director of Technical and Regulatory Affairs for a dietary supplement company with over $1 billion in sales.

Mr. Lassiter's anticipated testimony in this case will be based on his education, research, and experience. He will testify regarding the evolution of standard operating procedures in the dietary supplement industry; in particular, changes to the regulatory landscape in the industry from 2007 to present.

DATED: May 8, 2017

Respectfully submitted,

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CERTIFICATE OF SERVICE

On May 8, 2017, I electronically submitted the foregoing document with the clerk of the court of the U.S. District Court, Northern District of Texas, using the electronic case filing system of the court. I hereby certify that I have served all counsel of record electronically or by another manner authorized by Federal Rule of Civil Procedure 5(b)(2), and the probation officer assigned to the case.

/s/ Richard B. Roper
Richard B. Roper